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and the same conception might be adopted with respect to the art of milling, preparing grain, and making bread.

It is sometimes affirmed that there is no science of political economy. Such an exhibition as I have sketched in this somewhat visionary way would show in a concrete form the very object-lessons with which the political economy must deal; and I think one would soon predicate on the record of the past four centuries the possibilities of the next, yet it has only been within the last century that covers the existence of this nation that the chief part of this progress has been made. This has been the century in which an abundance of metals, which lie at the foundation of all arts, have been placed at the disposal of the science of metallurgy. It has been the century in which heat has been converted into power by methods which are even yet crude and imperfect; it has been the century in which time and distance have ceased in a great measure to obstruct the mutual services on which human welfare depends. We stand at the beginning of the century in which known agencies or new directions of energy—new inventions of which we can only dimly perceive and forecast in the future—will alter, change, and ameliorate the conditions of men in even greater measure than the inventions of the past, the only conditions precedent and necessary to such progress in welfare being that there shall be commensurate progress in the general intelligence of the people, especially of those who are chosen to legislate for them, equal in its measure to the progress in the arts.

Therefore the final objective point of this proposed exhibition of 1892 might well be to make it an object-lesson illustrating the interdependence of men and of nations, and their power to serve each other, in all the arts of peace which make for plenty. . . . It goes without saying that if any such comprehensive plan should be undertaken, a specific call would be made upon each State to make an exhibit of its power of serving others, by bringing together its minerals, its timbers, and the products of its soil and its forests, in a thoroughly systematic way,—after the manner of the exhibits of Kansas and Colorado in the Centennial, and after the manner of the exhibits of the Southern minerals and timber at Atlanta.

#### ELECTRICAL NEWS.

ATMOSPHERIC ELECTRICITY. — A study of the electric phenomena produced by solar radiations was presented at a meeting of the French Academy on Aug. 5 by M. Albert Nodon. Numerous observations made at the laboratories of the Sorbonne and the Collège de France show that on meeting an insulated metallic or carbon conductor the solar rays communicate to it a positive electric charge; that the amplitude of this charge increases with the intensity of the rays and decreases with the hygrometric state of the air, the phenomenon attaining its maximum value in Paris about 1 P.M. in summer, when the atmosphere is pure and dry; lastly, that the effects cease during the transit of clouds across the face of the sun. If these results can be extended to non-metallic bodies, then solar radiation may be regarded as one of the causes of the electrization of the clouds.

A NEW LAMP. — M. Henri Pieper, of Liège, has just invented a new incandescent lamp of very simple construction. It consists of two horizontal rods of copper placed about four millimetres apart. A thin pointed rod of carbon, placed vertically, rests on the copper rods and forms a bridge between them. The current passes between the copper rods through the carbon, which it renders incandescent. The copper rods are mounted on springs, which cause them to rise slightly when the carbon is totally consumed, and bring them against two contact pieces, thus preventing the rupture of the circuit.

#### HEALTH MATTERS.

THE KOLA-NUT. — The value of the kola-nut (seeds of *Sterculia acuminata*) as a dietetic and therapeutic agent has been recently tested by surgeon R. H. Firth, according to the *Lancet*. These nuts are allied in composition to cocoa, coffee, and tea, but contain a relatively large amount of caffeine. The properties ordinarily assigned to kola are those of a strong tonic and stimulant to the nervous system, counteracting and removing the sense of

exhaustion after fasting and fatigue; it has also been credited with having an antagonistic action to alcohol, and it has been said to purify water. From his observations surgeon Firth concludes that kola is in no sense a food; that it increases the total urinary water with a slight reduction of its total solids, and a marked reduction of the extractive; that it has a peculiar stimulant action on the nervous system; temporarily strengthens the heart-beat, and increases the arterial tension. In times of exertion and fasting it wards off the sense of mental and physical depression and exhaustion. As a therapeutic agent in convalescence, and as an antagonist to alcoholic sequelæ, kola has not yielded any positive results in surgeon Firth's hands. For the purification of water it does not appear to be superior to other mucilaginous seeds, its action being purely mechanical. In this report due prominence is given to the importance of separating seeds which contain no caffeine, such as *Garcinia kola* and *Sterculia cordifolia*, as these would speedily discredit the employment of kola by the troops under conditions when it might possibly be of service. It appears that an infusion, from its astringent action, might be used for those suffering from diarrhoea.

NEAR-SIGHTEDNESS. — Dr. Duclaux has communicated to the Academy of Sciences, in the name of Dr. Boucheron, says the Paris correspondent of *The Medical Record*, a note relative to hereditary myopia and its treatment in adolescence. The children of myopes are not born myopes; they become so, but at an age more and more young, according as generations succeed. Thus, a grandfather who became myopic at twenty years, having a son myopic at fifteen years, they would both have a slight myopia, and would be able to read without spectacles in their old age; but their grandchildren will become myopic at twelve years, and will already have been so to a great degree. The great-grandson will be a myope at eight years, will arrive at six dioptries of myopia at fifteen years, at eight dioptries at thirty years, will lose an eye at thirty-five years, and will have great difficulty in preserving his second eye to the end of his days. It is therefore necessary that this state of things should be more rigorously attended to. Dr. Boucheron remarked that in children somewhat the same thing happens with the muscles of the eye as what occurs in writer's cramp. The child strains in writing, contracts himself, and there is produced cramp of the accommodation of the eye, and this abnormal accommodation tends to become permanent in myopic pupils. Dr. Boucheron examined one hundred lycéens, and took the measure of their myopia. He instilled atropine into their eyes, and their myopia was modified. Hence, beyond the principles of hygiene, so easy to institute, he recommends the employment, in feeble doses, of atropine, duboisine, or simply cocaine.

EAU DE COLOGNE TIPPLING. — It is said that the practice of drinking cologne is becoming very common both in Europe and in this country, and, as an indication of this, that the sale of the perfume has increased greatly of late years. Women are more addicted to the habit than men, and a writer in the *Quarterly Journal of Inebriety* says that the presence of obscure and complex nervous disorders in a woman who uses cologne externally should always suggest the possibility of its internal use.

HYGIENE CONGRESS. — The Hygiene Congress at Paris brought its labors to a close on Aug. 10. Among the subjects discussed during the week was that of the pollution of rivers. The congress decided, says *Nature*, that the pollution of underground water-courses and of rivers by the residue of factories should in principle be forbidden, and that water from factories should not flow into a stream till it had been proved to be absolutely free from all injurious substances. The congress was strongly of opinion that the most perfect method of purification was by irrigation. This, of course, must, in certain cases, be preceded by such mechanical and chemical processes as would render the water fit for agricultural purposes. It was related that many manufacturers had benefited by the application of the law, as in their efforts to prevent the pollution of watercourses they had made discoveries enabling them to utilize waste products. The difficulty was with the smaller manufacturers, who were not rich enough to take the necessary measures. The congress decided that where persistent resistance was displayed

the authorities should themselves execute the works prescribed for the purification of the water, and compel the persons interested to pay the cost.

#### NOTES AND NEWS.

THE United States Hay Fever Association held its sixteenth annual meeting on the 27th of August, at Bethlehem, N.H.

— The Congress of Physiological Psychology held in Paris recently is considered to have been very successful. It was decided that a second meeting should be held in 1892, either in London or in Cambridge, during the month of August.

— A company has been organized in Brussels for the purpose of constructing a railway from Matadi to Stanley Falls on the Kongo. The road, as projected, will have a length of about 270 miles, and is intended to surmount the difficulties of traffic on the cataract region of the lower Kongo.

— Captain Phythian, the Superintendent of the Naval Observatory, Washington, states that the preparations for the expedition to Africa to observe the total eclipse of the sun, which occurs in December next, are being actively pushed forward. The smallness of the appropriation by Congress for this work, \$5,000, necessitates careful expenditures, and it will be impossible to send the expedition to St. Paul de Loando, where the observations will take place, except on a Government vessel. The expedition will sail about Oct. 1.

— An ancient treatise on anatomy has been unearthed at the Royal Library at Berlin. It was written in Latin in 1304, by Henry de Mondeville, professor of surgery at Paris and Montpellier, and body-surgeon to Philip le Bel. Surgeon de Mondeville was at one time on English soil as an army surgeon, and his death took place in 1318. The book has never been printed. It is valuable as throwing light upon a period concerning whose medical history there is but little known.

— A. J. Drexel, banker, of Philadelphia, proposes to purchase land, construct the necessary buildings, and provide for the maintenance of instructors and all things necessary for the establishment of an industrial institute for young men and women that will be capable of accommodating a thousand of each sex. This plan is a substitute for one proposed some time since, to establish an industrial college for girls in the country, near Philadelphia. It was found that there were several serious obstacles to such a project, and in its stead Mr. Drexel undertakes to establish and maintain this larger and more general institute. The institute will probably be modeled somewhat after the Cooper Institute of New York, and it is expected that the cost will be about a million and a half of dollars.

— A new Austrian patented process for silvering articles of iron is thus described: The article is first plunged in a pickle of hot dilute hydrochloric acid, whence it is removed to a solution of mercury nitrate, and connected with the zinc pole of a Bunsen element, gas carbon of platinum serving as the other pole. It is rapidly covered with a layer of quicksilver, when it is removed, washed, and transferred to a silver bath and silvered. By heating to 572 degrees F. the mercury is driven off, and the silver firmly fixed on the iron. To save silver the wire can be first covered with a layer of tin; 1 part of cream of tartar is dissolved in 8 parts of boiling water, and one or more tin anodes are joined with the carbon pole of a Bunsen element. The zinc pole communicates with a well-cleaned piece of copper, and the battery is made to act till enough tin has deposited on the copper, when this is taken out and the ironware put in its place. The wire thus covered with tin chemically pure and silvered is much cheaper than any other silvered metals.

— Mr. M. E. Allison of Hutchinson, Kan., in a letter to *The American Field*, says, "An experience I had lately with a quail (Bob White) was so interesting to me, I thought it might interest some of my brother sportsmen who are better acquainted with the habits of the quail than I am. In the corner of our coursing park there was a quail's nest, and it was so near to the road that when

we would be passing by it, to and from the park, the old quail would fly away, and it was always the male bird. My never seeing the female around there is what attracted my attention; and I noticed that the male was crippled in one leg, and only used one in hopping about, and appeared to be crippled otherwise. There were twelve eggs in the nest, and after ten or twelve days from the time I first noticed it the young brood all hatched, and the old male bird took them and left the nest. The female bird was never seen anywhere in that neighborhood by myself or any of the men at work there, and some of us were there every day; but we never failed to find him on the nest. I came to the conclusion that someone had killed the female while she was laying the eggs, and at the same time wounded the male; and he, knowing his companion was gone, took charge of the nest and set on the eggs, hatched them, and is now raising the little orphans on his own hook. If these are the facts, and it seems to be so, is it not a very remarkable case?"

— At a recent meeting of the Paris Geographical Society, M. G. Rolland contributed some valuable data to the discussion, recently carried on between him and M. E. Blanc, on the subject of the yield of artesian wells in north Africa. After expressing his agreement with M. Blanc regarding the fundamental principles which regulate artesian basins generally, he proceeded to controvert the latter's assertion that in the case of the Ued Rir the admitted gain in the yield of water was not in proportion to the number of new wells sunk. M. Rolland adduced a table, recently compiled by him and M. Jus, showing the number of French wells in the Ued Rir, their total output per minute, and the average output of each well for the nine years ending in June, 1889. In 1880 there were 64 wells, with a total yield of 22,865 gallons a minute, or an average of 357; in 1889 there were 127 wells, with a total yield of 44,908 gallons a minute, or an average of 354, showing that while the number of wells had doubled, the yield had very nearly doubled also. He admitted that in certain parts of the Ued Rir, notably the central part, the limit of yield had been reached. He concluded by suggesting that there should be some authority to regulate the number and position of all new wells to be sunk.

— Henry L. Bolley, assistant botanist at the Indiana Agricultural Experiment Station, Purdue University, thus sums up the results of some investigations on wheat rust recently made by him. The rusting of wheat is due to the attacks of several species of minute fungi. The disease is propagated by means of various spores, one form of which is developed upon various determined and undetermined plants, mostly weeds. This side form is not, as yet, proved to be essential to the continued life of the parasites, but its destruction decreases the danger from serious attacks of the disease. One species (*P. rubigo vera*) in its uredo stage is able to pass the winter in the tissues of the young wheat plant. In warm weather, any conditions of the soil or atmosphere which tend to keep the wheat leaves constantly wet are conducive to the rapid spread of the disease. Low-lying, rich soils are most subject to the disease. No variety of wheat is known to be rust proof, yet some possess greater powers of resistance than others. Though not proved, an excess of nitrogen in the soil is to be considered, probably, as liable to produce wheat easily affected by rust. If fertilizers are to be applied to such lands, those containing only inorganic elements are most advantageous so far as immunity against rust is concerned. In districts liable to severe visitations of the disease, early-ripening wheats are to be preferred.

— Henry Shaw, a well-known philanthropist of St. Louis, died on Aug. 25 in that city. He was an Englishman, and at the age of nineteen years he came to this country, settling in St. Louis in 1819, where he embarked in the hardware business. After twenty years of commercial life he amassed a sufficient fortune to enable him to retire from business. He made a tour of the world, occupying about ten years in travel. On his return to St. Louis he began the study and cultivation of plants and flowers, and it was in the prosecution of these studies that the botanical gardens containing fifty acres, near Tower Grove Park, had their origin. He made the park and gardens free to the public, and now, with his death, the gardens become the property of the State of Missouri. Tower Grove Park, comprising 350 acres, becomes the property of the